

REMOVABLE LIGHT ASSEMBLY OF PRE-DEFINED SHAPE
FOR A WEAPON

5 **FIELD OF THE INVENTION**

The present invention relates, in general, to the field of aiming devices. More particularly, it concerns a light assembly of pre-defined shape, for removable attachment to a guide provided on a weapon.

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BACKGROUND OF THE INVENTION

15 In the field of weapons, one major concern is proper aiming of the target of interest. In the prior art, there has been a number of aiming accessories, such as lasers, sites, flashlights or other accessories which can be mounted on firearms. Most of these accessories use various forms of locking screws, captive screws, nut and bolt clamps or other similar techniques to clamp the accessory to the weapon, as opposed to a
20 latching mechanism which would safely lock the accessory to the weapon. Examples of such prior art accessories are given in US patents or patent applications nos. US 2001/0027620 A1; US 2001/0045046 A1; US 5,555,662; US 5,584,137; US 5,941,489; and US 6,565,226.

25 As can be appreciated, the just-mentioned aiming accessories present a number of caveats. Accordingly, such accessories can not be readily mounted on and detached from the weapon. In most cases, such mounting and detaching require the use of specific tools, or of both hands. Therefore, the weapon user can not simply grip the aiming device with one
30 hand and readily mount it on his weapon in order to proceed to a precise triggering.

Other related prior art documents also present significantly different types of attachment methods to weapons or involve weapons that do not have a standard rail which can be interfaced with aiming accessories. Examples of such prior art accessories are given in US patents nos. US 2002/0007581 A1; US 2002/0100204 A1; US 4,707,772; US 4,777,754; US 5,040,322; US 5,727,346; US 5,816,683; US 5,822,905; US 6,318,014; and US 6,574,901. The problem of such prior art devices is again the cumbersome mounting process as well as the bulkiness of such devices. More specifically, if the accessories can not be readily mounted on the weapon, they have to be provided with their specific mounting device thus decreasing the motility of the weapon user on site.

Also known in the prior art is a clamping mechanism for attaching an auxiliary apparatus to the frame of a weapon, which is further characterized in that the actual attachment or removal of the apparatus can be accomplished by a user with one hand, without using separate brackets or other mechanical components. These elements are disclosed in US patent no. US 5,430,967 (Woodman *et al.*).

It is thus apparent, from the above-mentioned prior art documents, there is a lack for an aiming device which can be readily mounted on a weapon and be readily used separately, as an independent light assembly.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an aiming device, more particularly a light assembly, which satisfies the above-mentioned needs. More specifically, an object of the present invention is to provide a light assembly to be readily mounted on a weapon and be readily removed

therefrom while resuming its original pre-defined shape, in order to be usable as a separate entity.

5 In accordance with the present invention, this object is achieved with a light assembly having a pre-defined shape, for removable attachment to a guide provided on a weapon. The light assembly comprises a housing, provided with a reflector having a lamp at one end thereof and batteries for powering the lamp through a switch. The housing of the light assembly has a pair of lateral members which can both be moved between a retracted position and an extended position. When the lateral members are in the retracted position, the light assembly has the above-mentioned pre-defined shape. When the lateral members are in the extended position, these members are adapted to engage the guide provided on the weapon. Preferably, each one of the lateral members is provided with a longitudinal groove which is shaped and sized to slidably engage a corresponding flange on the guide.

20 The housing of the light assembly of the present invention further has means for preventing longitudinal movement of the light assembly on the guide. According to a preferred embodiment of the present invention, the guide is provided with a plurality of cross-slots and each one of the lateral members further includes a latch having an upper portion and a lower portion. The upper portion and the lower portion of the latch each has an inner face adjacent to the side of the housing and an outer face. The latch also has a latch projection projecting inwardly from the inner face of the lower portion of the latch, for engaging any one of the above-mentioned cross-slots. The latch is pivotable between an operative and an inoperative position so that when the latch is in the operative position, it is normally inwardly biased, with the latch projection protruding into the side of the housing, thus providing the means for preventing longitudinal movement of the light assembly on the guide. When the latch is in the

inoperative position, the upper portion is pivoted inwardly toward the housing while the lower portion is pivoted outwardly away from the housing, thereby preventing the latch projection from engaging the cross-slots.

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According to further aspects, the present invention provides a method for removably attaching the light assembly as defined above, to a guide provided on a weapon.

- 10 The method for removably attaching the light assembly, as defined above, to a guide provided on a weapon comprises the steps of: a) providing a light assembly as described above; b) extending the lateral members until they are in the extended position; c) engaging the longitudinal grooves of the lateral members into the flanges of the guide; d) moving and
15 maintaining the latches in their inoperative position, while sliding the light assembly on the guide; and e) moving the latches in their operative position.

- Preferably, the method further comprises the following steps: f) moving
20 and maintaining the latches in their inoperative position, while sliding the lateral members until they are in the retracted position; and g) moving the latches in their operative position, so that the light assembly resumes its pre-defined shape.

- 25 As can be appreciated, the light assembly according to the invention is very versatile, as it can be mounted on any known weapon guide while still being usable as a separate entity aside from the weapon and the guide.

- These and other features, objects and advantages of the present invention
30 will be better understood upon reading the following non-restrictive

description of preferred embodiments thereof, made with reference to the accompanying drawings.

5 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1A is a top view of a light assembly mounted on a guide, according to a preferred embodiment of the invention.

Figure 1B is a front view of the light assembly of Figure 1A.

10 Figure 1C is a front perspective view of the light assembly of Figure 1A.

Figure 1D is a side view of the light assembly of Figure 1A.

Figure 2 is a rear perspective view of the light assembly of Figure 1A.

Figure 3 is a cross-sectional view of the light assembly of Figure 1C taken along line III-III.

15 Figure 4A is a top view of the light assembly of Figure 1C, without the guide.

Figure 4B is a front view of the light assembly of Figure 4A.

Figure 4C is a front perspective view of the light assembly of Figure 4A.

Figure 4D is a side view of the light assembly of Figure 4A.

20 Figure 5 is a cross-sectional view of the light assembly of Figure 4C taken along line V-V.

Figure 6 is a front perspective view of the light assembly of Figure 4C.

25 While the invention will be described in conjunction with a preferred embodiment, it will be understood that it is not intended to limit the scope of the invention to such embodiment. On the contrary, it is intended to cover all alternatives, modifications and equivalents which may be included, as defined by the appended claims.

DESCRIPTION OF A PREFERRED EMBODIMENT

In the following description, similar features in the drawings have been given similar reference numerals and, in order to lighten the figures, some elements are not referred to in some figures if they were already identified in a previous figure.

As shown in Figures 1A to 1D, 2 and 3, a light assembly **10** according to a preferred embodiment of the present invention, having a pre-defined shape, is removably attachable to a guide **20** provided on a weapon. Any guide, preferably provided with parallel flanges **22** can be used to slidably engage the lateral members of the light assembly's housing. This allows any guide, such as a railing system, preferably an M1913 rail or any equivalent thereof, to engage a light assembly while being mounted on the weapon of interest.

The light assembly **10** comprises a housing, preferably with two sides. Each side of the housing of the light assembly **10** is provided with a pair of lateral members **30**, preferably received by corresponding channels **40** provided on each side of the housing. Referring to Figure 2, each channel **40** preferably comprises a back face **42** and inwardly sloping sidewalls **44** for maintaining the lateral member **30** within each channel **40**. Alternatively and as shown in Figures 1A to 1D, the channel **40** can be substantially U-shaped and sized to receive a corresponding lateral member **30**. This channel **40** is provided with guiding members **46** protruding outwardly and perpendicularly from the channel **40**, preferably from the back face **42** thereof, for slidably engaging corresponding grooves **48** extending from the upper edge **34** to the lower edge **36** of the lateral members **30**.

The lateral members **30** are movable between a retracted position, as shown in Figure 5, and an extended position, as shown in Figure 3, by a

distance at least equal to distance **x**. Distance **x** is the distance between the longitudinal groove **38** and the lowest point **A** of the housing, as shown in Figure 5.

- 5 In order for the lateral members **30** to remain in the retracted position, locking means are provided to lock the lateral members **30** in position. Similarly, locking means are provided to prevent the lateral members **30** from extending beyond the extended position.
- 10 When the lateral members **30** are locked in their retracted position, these lateral members **30** are adapted to engage the housing. Referring especially to Figure 5, one can appreciate that each channel **40** comprises a back face **42** and sidewalls **44**. The back face **42** of each channel comprises a depression **41** shaped and sized to receive a respective latch
- 15 projection **78** so that, when the lateral members **30** are in the retracted position, each latch projection **78** engages a respective depression **41**, thereby locking the lateral members **30** at distance **x**.

- When the lateral members **30** are locked in their extended position, they
- 20 are positioned so that the lowest point **A** of the housing is at least as close as possible to the guide **20** in order to allow the eventual sliding movement of the light assembly **10** on the guide **20**. Referring more specifically to Figures 1 to 3, one can appreciate that each lateral member **30** comprises an inner substantially planar face **32** bounded at least by an upper edge
 - 25 **34** and a lower edge **36**. The inner face **32** of the lateral members **30** is further characterized in that it is adjacent to the side of the housing and provided with a longitudinal groove **38** proximate and parallel to the lower edge **36**. The longitudinal groove **38** is shaped and sized to slidably engage a corresponding flange **22** of the guide **20**.

Preferably, the guide is provided with a plurality of cross-slots **60** and each lateral member **30** further includes a latch **70** with an upper portion **72** and a lower portion **74**. Each one of the upper portion **72** and the lower portion **74** has an inner face, adjacent to the side of the housing, and an outer face.

Each latch further has a latch projection **78** projecting inwardly from the inner face of said lower portion **74** of the latch, for engaging any one of the cross-slots **60**. Each latch **70** is further characterized in that it is preferably rotatable about a pivot **76** between an operative position (right side of Figure 3) and an inoperative position (left side of Figure 3).

As shown in Figure 3 (right side), when the latch **70** is in the operative position, it is inwardly biased, with the latch projection **78**, projecting inwardly from the inner face of the lower portion **74** of the latch and engaging a cross-slot **60**, thereby providing the means for preventing longitudinal movement of the light assembly **10** on the guide **20**.

Without departing from the scope of the present invention, it will be apparent for any person skilled in the art that the means for preventing longitudinal movement of the light assembly can comprise at least two, and preferably a plurality of projections protruding downwardly and outwardly from the area below the housing closest to the guide. Such projections would serve the same purpose as the latch projections **78** in their operative position (Figure 3 – right side).

Referring now to Figure 3 (left side), one can appreciate that, when the latch **70** is in the inoperative position, the upper portion **72** is pivoted inwardly toward the housing while the lower portion **74** is pivoted outwardly away from the housing, thereby preventing the latch projection **78** from engaging any cross-slot **60**. The retractable movement of the latch

70 is preferably initiated by a pressure, more preferably applied with fingers, on compressible and recoilable means such as springs or any equivalent thereof, provided in the upper portion **72** of the latch, for inwardly biasing the latch **70**.

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Referring to Figures 4A to 4D, 5 and 6, the housing is provided with a reflector **12** having a lamp **14** at one end thereof and batteries **16** for powering said lamp **14**, such as a LED assembly, through a switch, such as a push button switch **19**. The light assembly **10** is further characterized
10 in that the reflector, the batteries and the switch, enclosed in the housing, pre-define the shape of the light assembly **10**. By "pre-defined shape", it will be understood that the light assembly **10** has an advantageously uninterrupted profile when considered as a whole. More specifically, the uninterrupted profile of the light assembly **10** means that all the
15 components of the housing have the same general shape, even though the reflector portion is larger than the battery portion which, in turn, is smaller than the switch portion of the housing. The light assembly **10** may advantageously have an ergonomic shape so that the user can comfortably grip it with one hand. The light assembly **10** may thus have a
20 rectangular, oval or triangular shape, but preferably, a substantially cylindrical shape.

As can also be appreciated from Figure 4B, the uninterrupted profile of the light assembly is best depicted when the lateral members **30** are in the
25 retracted position. More specifically, the outer face of both the upper and lower portions **72,74** of the latch, as well as the outer face of the lateral members, are shaped so that they form this uninterrupted profile with the rest of the housing.

30 Furthermore, the light assembly **10** may advantageously be of dimensions similar to the dimensions of the guide **20**, as best shown in Figures 1A

to 1C. More specifically, the width of the light assembly **10** is preferably somewhat similar to the width of the guide. As can be understood, the width of the light assembly and the guide is determined along the axis perpendicular to the main axis of each of these elements. It is thus clear
5 that the present invention alleviates the need to use bulky light assemblies as aiming device accessories, which are not practical on site where vigilance, accuracy and rapidity are of the essence.

The present invention also provides a method for removably attaching the
10 light assembly, as defined above, to a guide provided on a weapon comprises the steps of: a) providing a light assembly as described above; b) extending the lateral members until they are in the extended position; c) engaging the longitudinal grooves of the lateral members into the flanges of the guide; d) moving and maintaining the latches in their inoperative
15 position, while sliding the light assembly on the guide; and e) moving the latches in their operative position.

Preferably, the method further comprises the following steps: f) moving and maintaining the latches in their inoperative position, while sliding the
20 lateral members until they are in the retracted position; and g) moving the latches in their operative position so that the light assembly resumes its pre-defined shape.

Although preferred embodiments of the present invention have been
25 described in detail herein and illustrated in the accompanying drawings, it is to be understood that the invention is not limited to these precise embodiments and that various changes and modifications may be effected therein without departing from the scope or spirit of the present invention.